QUESTION Show that the only solution of the equation

$$\lambda(0, 2, 3) + \mu(4, 5, 6) + \nu(7, 8, 9) = (0, 0, 0)$$

is $\lambda = \mu = \nu = 0$

ANSWER This is equivalent to solving

$$
\begin{aligned}
4\mu + 7\nu &= 0 \\
2\lambda + 5\mu + 8\nu &= 0 \\
3\lambda + 6\mu + 9\nu &= 0
\end{aligned}
$$

The coefficient matrix A has non-zero determinant, so it can be inverted and the solution is $A^{-1}\mathbf{0} = \mathbf{0}$.